

IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Previously Presented): A cylindrical grinding machine having a bed; a workpiece support device for rotatably supporting said workpiece about a horizontal axis on said bed; and a wheel head unit rotatably supporting a grinding wheel for grinding said workpiece and guided on said bed to be movable in a first horizontal direction parallel to said horizontal axis and in a second horizontal direction extending across said horizontal axis; said grinding machine comprising:

a coolant collecting vent opening to said bed and vertically extending directly under a machining area where said grinding wheel comes into contact with said workpiece;

a horizontal vent formed in said bed in communication with a lower end portion of said coolant collecting vent and horizontally extending to open to a lateral surface of said bed; and

a coolant collecting device having a portion for collecting said coolant and having at least a portion thereof including a coolant inlet portion inserted into said horizontal vent to present said coolant inlet portion under the coolant collecting vent,

wherein said wheel head unit comprises:

a slide base guided at both ends of said slide base on said bed to be movable back and forward in said second horizontal direction with a mid portion of said slide base straddling over at least a part of said coolant collecting vent; and

a wheel head guided on said slide base to be movable in said first horizontal direction and rotatably supporting said grinding wheel.

Claim 2 (Cancelled).

Claim 3 (Previously Presented): The cylindrical grinding machine as set forth in claim 1, wherein said workpiece support device comprises:

a support table provided at said bed on an upper portion of said bed and formed with an upright support portion extending in said first horizontal direction; and

first and second support heads mounted on said support portion of said support table and arranged spaced in said first horizontal direction for rotatably supporting ends of said workpiece, at least one of said first and second support heads being provided with drive means for rotating said workpiece; and

wherein lower portions of said first and second support heads are not secured to said support table.

Claim 4 (Previously Presented): A cylindrical grinding machine having a bed; a workpiece support device for rotatably supporting said workpiece about a horizontal axis on said bed; and a wheel head unit rotatably supporting a grinding wheel for grinding said workpiece and guided on said bed to be movable in a first horizontal direction parallel to said horizontal axis and in a second horizontal direction extending across said horizontal axis; said grinding machine comprising:

a coolant collecting vent opening to said bed and vertically extending directly under a machining area where said grinding wheel comes into contact with said workpiece;

a horizontal vent formed in said bed in communication with a lower end portion of said coolant collecting vent and horizontally extending to open to a lateral surface of said bed; and

a coolant collecting device having a portion for collecting said coolant and having at least a portion thereof including a coolant inlet portion inserted into said horizontal vent to present said coolant inlet portion under the coolant collecting vent, wherein:

said coolant collecting vent passes through said bed from an upper surface of said bed to a lower surface of said bed to open to a floor surface on which said grinding machine is installed: and

said coolant collecting device is movable on said floor surface.

Claim 5 (Previously Presented): The cylindrical grinding machine as set forth in claim 1, wherein:

said coolant collecting vent has a rectangular shape as viewed from above;

the width of said coolant collecting vent in said first horizontal direction is set so that said coolant collecting vent opens directly under both ends of any workpiece supported by said workpiece support device; and

the depth of said coolant collecting vent in said second horizontal direction is set so that said coolant collecting vent faces the lower surface of said slide base when said grinding wheel is advanced to a grinding position to grind said workpiece.

Claim 6 (Previously Presented): The cylindrical grinding machine as set forth in claim 1, wherein said wheel head is provided with a pair of bearing sections at opposite sides of said grinding wheel for rotatably supporting said grinding wheel at the opposite sides thereof.

Claim 7 (Previously Presented): The cylindrical grinding machine as set forth in claim 1, wherein:

said slide base is guided at both end portions thereof to be movable back and forth in said second horizontal direction above a grinding point at which said grinding wheel comes into contact with said workpiece;

said wheel head is suspended from said slide base to be movable back and forth in said first horizontal direction; and

first guide means on said bed for guiding said slide base and second guide means on said slide base for guiding said wheel head are disposed at higher positions than said grinding point.

Claim 8 (Previously Presented): A cylindrical grinding machine having a bed; a workpiece support device for rotatably supporting said workpiece about a horizontal axis on said bed, and a wheel head unit rotatably supporting a grinding wheel for grinding said workpiece at a machining area and guided on said bed to be movable in a first horizontal direction parallel to said horizontal axis and in a second horizontal direction extending across said horizontal axis; wherein said bed, as viewed from above, takes the form of a U-letter shape which opens at the rear end portion of said bed and defines a vent space at the central portion of said bed for use as a coolant collecting space, said vent space being present directly under said machining area; said grinding machine comprising:

a coolant supply device inserted into said bed from the opened rear end portion of said bed and presenting a coolant inlet portion thereof directly under said vent space for collecting the coolant falling down from a machining area in which said grinding wheel grinds said workpiece; and

a slide base included in said wheel head unit and guided at both ends thereof on said bed to be movable in said second horizontal direction with a mid portion of said slide base straddling over said vent space.

Claim 9 (Previously Presented): A cylindrical grinding machine having a bed; a workpiece support device for rotatably supporting said workpiece about a horizontal axis on

said bed; and a wheel head unit rotatably supporting a grinding wheel for grinding said workpiece and guided on said bed to be movable in a first horizontal direction parallel to said horizontal axis and in a second horizontal direction extending across said horizontal axis; said grinding machine comprising:

- a coolant collecting vent opening to said bed and vertically extending directly under a machining area where said grinding wheel comes into contact with said workpiece;

- a horizontal vent formed in said bed in communication with a lower end portion of said coolant collecting vent and horizontally extending to open to a lateral surface of said bed; and

- a coolant collecting device having a portion for collecting said coolant and having at least a portion thereof including a coolant inlet portion inserted into said horizontal vent to present said coolant inlet portion under the coolant collecting vent, wherein said coolant collecting device comprises:

 - a funnel member provided in said coolant collecting vent directly under said machining area for gathering coolant falling down into said coolant collecting vent;

 - a discharge duct inserted into said horizontal vent from the opening formed at said lateral surface of said bed and presenting one end of said discharge duct opening under said funnel member for feeding coolant gathered by said funnel member outside said bed;

 - a mist discharge duct branching from said discharge duct adjacent another end of said discharge duct and extending upward;

 - a mist collecting device connected to said mist discharge duct for sucking the mist from said mist discharge duct; and

 - airflow blocking means for permitting the coolant to go out from an outlet port provided at the other end of said discharge duct, but blocking the airflow from said outlet port toward said mist discharge duct.

Claim 10 (Original): The cylindrical grinding machine as set forth in claim 9, wherein said airflow blocking means comprises:

means for forming a stagnant portion which is capable of enabling coolant to flow or to remain; and

a partition plate having a lower end edge extended into the coolant which is flowing or remaining in said stagnant portion, for blocking the airflow above the surface of the coolant remaining in said stagnant portion, but permitting the coolant to flow through a space below said lower end edge thereof.

Claim 11 (Original): The cylindrical grinding machine as set forth in claim 10, wherein said means for forming said stagnant portion comprises:

a container connected to said outlet port at said other end of said discharge duct and capable of maintaining the coolant flowing thereinto from said outlet port at a predetermined level; and

wherein said partition plate is suspended from a top plate of said container with said lower end edge extending into the coolant remaining within said container for partitioning a space at the side of said outlet port of said container to be blocked from the atmosphere.

Claim 12 (Previously Presented): The cylindrical grinding machine as set forth in claim 11, wherein said coolant collecting device further comprises:

a chip separation device for magnetically separating grinding chips from the coolant flowing into said container; and

a coolant reservoir for receiving overflow coolant discharged from said container so that said container maintains the coolant flowing therein at said predetermined level.

Claim 13 (Previously Presented): The cylindrical grinding machine as set forth in claim 9, wherein said airflow blocking means comprises:

a partition plate suspended from a top plate of said discharge duct between a branch point where said mist discharge duct branches from said discharge duct and said outlet port and extending at a lower end portion thereof below the surface of the coolant flowing in said discharge duct for blocking the airflow through a space above the surface of the coolant.

Claim 14 (Original): The cylindrical grinding machine as set forth in claim 9, further comprising:

cover means for covering four lateral surfaces and a top surface of said machining area.

Claim 15 (Currently Amended): A cylindrical grinding machine having a bed; a workpiece support device for rotatably supporting said workpiece about a horizontal axis on said bed; and a wheel head unit rotatably supporting a grinding wheel for grinding said workpiece and guided on said bed to be movable in a first horizontal direction parallel to said horizontal axis and in a second horizontal direction extending across said horizontal axis; said grinding machine comprising:

a coolant collecting vent opening to said bed and vertically extending directly under a machining area where said grinding wheel comes into contact with said workpiece;

a horizontal vent formed in said bed in communication with a lower end portion of said coolant collecting vent and horizontally extending to open to a lateral surface of said bed; and

a coolant collecting device having a portion for collecting said coolant and having at least a portion thereof including a coolant inlet portion inserted into said horizontal vent to present said coolant inlet portion under the coolant collecting vent,

wherein said workpiece support device comprises:

a support table provided at said bed on an upper portion of said bed and formed with an upright support portion extending in said first horizontal direction; and

first and second support heads mounted on said support portion of said support table and arranged spaced in said first horizontal direction for rotatably supporting ends of said workpiece, at least one of said first and second support heads being provided with drive means for rotating said workpiece; and

wherein lower portions of said first and second support heads are not secured to said support table.